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combination for every day use, viz., into that neutral white, which makes garishness in color an affliction to the nerves, and almost a crime. It required a Newton to decompose this white light, as it is termed, and to show us the glaring nature of its constituents, which, if they were poured down upon us in their full positiveness, as they are sometimes hurled at us by vulgar, undisciplined tastes, would torture to the racking, and perhaps finally kill us out-right. True Decoration, true Art, consists in combinations of moderate forms and colors, in moderating or attempering extremes, in breaking and restoring balance; but these are only so many different modes of expressing the art of proportioning. Moderation is the principle that should reign not only over soul and body, but over the Decoration of the Healthy Human Dwelling, for "Taste, like Morals, loves the Golden Mean."

ON THE INFLUENCES THAT DETERMINE THE QUALITIES OF WOOD.

BY FRANKLIN B. HOUGH.

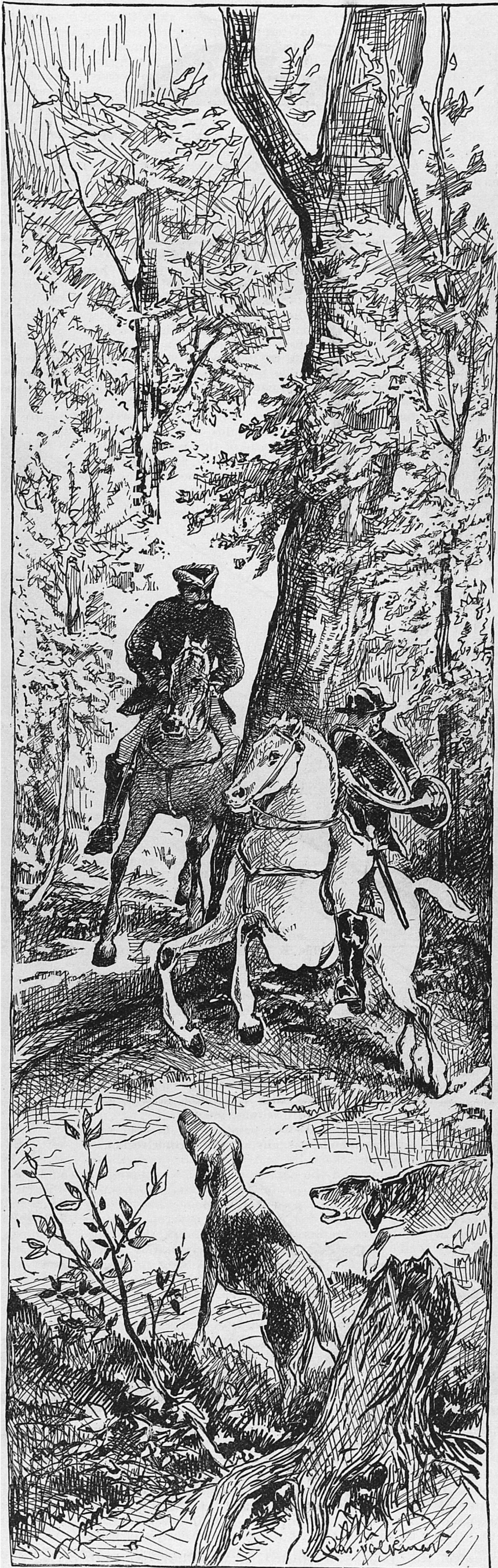
It is a fact well known to all dealers and workers in wood, that the same species may differ within certain limits, and often to considerable degree, in solidity or density, strength, elasticity, durability and value generally, according to the condition under which it has been grown, the time of year when it was cut, and the manner in which it had been seasoned.

As the growth of the wood must come from materials taken up by the roots, or from the air, and as the latter (except in respect to humidity) is very nearly constant in its chemical composition, the differences due to the atmosphere can vary only with the temperature and the humidity, while those in the soil have a much wider range, and must be a principal cause of the differences that we find in wood.

As to these differences in density, we may in a general way, state it as a common fact that the wood near the foot of a tree is more dense than that at the top; that it is greater in old trees than in young ones, more on good soil than on poor, more in a humid soil than in one that is dry, and more in a warm climate or situation than in one that is cold. The qualities of strength and elasticity do not follow the same rule, for some of the best of timbers in these respects come from cold climates and elevated localities.

We have instances in which a strong contrast of conditions may exist at different seasons of the year, as in grounds wet or flowed for a time in Winter, and very dry in Summer. In such, the growth may be rapid, but the timber will be neither strong nor durable. Each layer of annual growth will, in fact, partake of the characters due to these changes of conditions; the inner portion, or first Spring growth, will be light and porous, while the outer layer will be very dense and hard. Yet in some kinds of timbers this may give strong contrasts in the color of the grain, that will commend it for use in inside finishings, and for wainscots and panels, where strength is not required, and where there is no exposure to hasten decay. These differences are often seen in the black ash and in some of the oaks.

It may further be generally observed, that diversity in the grain of wood is chiefly to be found in the woods grown in temperate climates, and where there is a strongly defined limit between the growth of different years. In the tropical woods we very



often find highly colored and greatly diversified shades of color in bands or stripes, and they may be maculated and discolored in various ways, but these differences are not limited to lines of growth, which are, in fact, scarcely distinguishable one from another, and they are probably due to the qualities of the soil, or to differences in exposure to the sun and light.

The season of cutting has a considerable effect, as well upon the durability of wood under exposure as to its strength, its elasticity, its tendency to dry-rot, its liability to warp and shrink, and its exposure to attack from insects. As a general rule, for durability and excellence, timber should be cut in the season when vegetation is suspended, that is to say, in Fall and Winter, or between the time when the wood has ripened and the buds of the next year are formed, and the season when the buds begin to swell for a new growth. If cut when the trees are full of sap, the juices tend to fermentation, which hastens decay. This remark applies chiefly to the sap wood, and the effect of seasons is much less apparent in the heart-wood.

In some countries it is recognized as a fact, that meteorological conditions have an effect on timber at the time of cutting. In the Pyrenees, for example, the coniferous trees, if cut in a hot south wind, are found to be more liable to the attack of insects than when these winds do not prevail. It may be possible that the insects are brought by the wind, or that the higher temperature at such times favors their operations. We will not notice the supposed effect of the moon's age upon the quality of the timber, further than to remark that the superstition is very ancient, and that it is still prevalent in some regions where the timber is only felled in a time of a growing moon.

It has been noticed that all the woods proverbially of long durability, such as the Tyrolean Larch, the Angelique and the Teak, have their fibres, and even their canals, incrustated with materials of different kinds, such as the carbonate of lime, silica, etc., and among these certain oily or resinous principles, which appear to resist decay. In countries and under situations where these same timbers are less durable, these deposits are less, perhaps, in part from a defect in the soil, but more probably from rapid growth and the want of time for these deposits to form. They would probably in these cases ripen with age.

It is now further known that by a microscopic examination, the probable durability of a given specimen of wood may be predicted with much confidence, from the presence or absence of these deposits, and that by this means we may distinguish between the same woods grown in different regions and climates, as, for example, between the mahogany of San Domingo and that grown in Honduras, Guiana, Brazil and on the African Coast. Even without the microscope, those accustomed to close observation in timber-dealing become accustomed to distinguish shades of difference due to these causes, and made apparent in the color, the appearance of the knots, the strength of fibre in the chips, and especially in the odor of the wood.

These qualities may be in a certain degree imparted, at least to the extent of arresting decay, by filling the pores with oil or varnish, which are absorbed better than paint, and besides have the advantage of giving a depth of tone to the natural color of the wood, and showing off with greater lustre the beauty of the grain. This operation, moreover, by hindering the absorption of moisture in the everchanging conditions of the atmosphere, will certainly diminish, if it does not wholly prevent, the shrinking and swelling, or the warping of lumber, to which some kinds, otherwise desirable on account of the beauty of their grain, are particularly liable. But before applying these or any form of stain or paint that tends to close the pores of the wood, it should be thoroughly seasoned, or it will certainly hasten its decay by preventing evaporation or further seasoning.